AMENDMENTS TO THE SPECIFICATION:

Please amend the paragraph beginning on Page 14, Line 26, and ending on Page 15, Line 11, of the specification as follows:

As the advection step begins, an interim array is used to receive advected microgrid cell information. This interim array is initialized to values of "1", and the size of the interim array corresponds to the size of the microgrid cellular field. During the advection step, new microgrid cell values are constructed via a multiplicative association of primes and then stored in the interim array at the appropriate locations. For example, a microgrid cell receiving one copy of a single material (such as material 1) would be represented by 1 x 43 = 43. A microgrid cell receiving 2 different materials may be numerically represented as 1 x 43 x 53 = 2279, which indicates the presence of both materials 1 and 3 in the microgrid cell. Similarly, a cell may receive two copies of the same material (e.g. 1 x 43 x 43 = 1849). If no material is advected into an interim array location, then the value remains as "1" and indicates that void is present. Again, FIG. 4A illustrates the spatial distribution of prime numbers in a macrogrid after the advection step 170 is complete. (Note that the original distribution of microcell fluid materials before the advection step is shown in FIG. 3.) Where there is a void, the array contains a numeral "1". Where there is an overlap of microgrid cells, the product of the material identifiers ~~identifers~~ (primes) of the overlapping microgrid cells is given.